450117-03309

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Jens WILDHAGEN
U.S. Serial No.:	Filed Concurrently Herewith
Title of Invention:	A DIGITAL FILTER FOR IQ-GENERATION, NOISE SHAPING AND NEIGHBOUR CHANNEL SUPPRESSION

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box Patent Application (35 U.S.C. 111)
Washington, D.C. 20231

Sir:

Before the issuance of the first Office Action, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claims 3, 5, 7 and 10 as follows:

3. (Amended) Filter according to claim 1, **characterized by**:

- a first delay element (1) with a delay N that receives the input signal (t(k));

- a first adder (3) that receives the output signal of said first delay element (1) at a first input for the first summand;

- a second delay element (2) with a delay N that receives the sum produced by said first adder (3);

- a first subtracter (4) that receives the input signal (t(k)) at a first input for the minuend and the output signal of the second delay element (2) at a second input for the subtrahend; and

- a first multiplier (5) that receives the calculated difference of the first subtracter (4), multiplies it respectively with a predetermined multiplication coefficient (αaak)) and outputs the calculated product to a second input of the first adder (3) that receives the second summand, wherein

- in case x equals to 1 the sum produced by said first adder (3) builds the output signal (u(k)) of the branch allpass filters.

5. (Amended) Filter according to claim 2, **characterized in that** every one of said at least one multipliers (5, 9) has quantised coefficients so that it can be realised by at least one shift register, at least one adder or at least one subtracter.

7. (Amended) Filter according to claim 1, **characterized in that** a polyphase filter of order $x \cdot N$ with $x = a$ is realised in a time multiplex and works with a clock frequency $fc = a \cdot fs$.

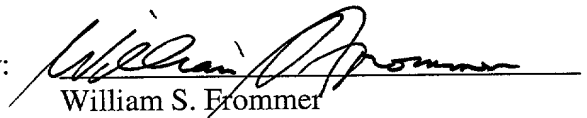
10. (Amended) IQ-generator in which an incoming sampled bandpass signal s(k) gets multiplied by a signal $A(k)=(-1)^{floor\,(k/N)}$ before being supplied as input signal t(k) to a polyphase filter consisting of N branch allpass filters of order x.N, **characterized by** one polyphase filter according to claim 1 to filter the I-component and the Q-component of a complex baseband signal.

REMARKS

Claims 1-7 remain in the application. Claims 3, 5, 7 and 10 have been amended to eliminate multiple dependencies. Attached hereto is a marked up version of the changes made to claims 3, 5, 7 and 10 by the current amendment. The attached page is captioned **"Version with markings to show changes made."** The filing fee has been calculated based upon these amendments to the claims.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
Attorneys for Applicant

By: 
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

3. (Amended) Filter according to claim 1 ~~or 2~~, **characterized by**:

- a first delay element (1) with a delay N that receives the input signal (t(k));

- a first adder (3) that receives the output signal of said first delay element (1) at a first input for the first summand;

- a second delay element (2) with a delay N that receives the sum produced by said first adder (3);

- a first subtracter (4) that receives the input signal (t(k)) at a first input for the minuend and the output signal of the second delay element (2) at a second input for the subtrahend; and

- a first multiplier (5) that receives the calculated difference of the first subtracter (4), multiplies it respectively with a predetermined multiplication coefficient (a(k)) and outputs the calculated product to a second input of the first adder (3) that receives the second summand, wherein

- in case x equals to 1 the sum produced by said first adder (3) builds the output signal (u(k)) of the branch allpass filters.

5. (Amended) Filter according to ~~anyone of claims 2 to 4~~ claim 2, **characterized in that** every one of said at least one multipliers (5, 9) has quantised coefficients so that it can be realised by at least one shift register, at least one adder or at least one subtracter.

7. (Amended) Filter according to ~~anyone of the preceding claims~~ claim 1, **characterized in that** a polyphase filter of order $x \cdot N$ with $x = a$ is realised in a time multiplex and works with a clock frequency $fc = a \cdot fs$.

10. (Amended) IQ-generator ~~according to claim 8 or 9~~ in which an incoming sampled bandpass signal s(k) gets multiplied by a signal $A(k)=(-1)^{floor\ (k/N)}$ before being supplied as input signal t(k) to a polyphase filter consisting of N branch allpass filters of order x.N, **characterized by** one polyphase filter according to ~~anyone of claims 1 to 7~~ claim 1 to filter the I-component and the Q-component of a complex baseband signal.